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Then and Now

ON another page a correspondent refers to an early experience of WILLIAM HUNTING, and a perusal of his letter moved us to turn back to the first issue of THE VETERINARY RECORD, which Hunting produced on July 14th, 1888. It makes fascinating reading alike in its similarity and its dissimilarity to THE RECORD as it is to-day. So far as similarity is concerned, Hunting observes that he is supported by a " voluntary staff of contributors," and we cannot but remark upon the enormous debt that this journal owes to its voluntary contributors over a period of nearly 70 years. He goes on to say in his first editorial note that THE RECORD is to be not only a scientific, but a professional journal. " Firmly believing that the science of Medicine derives even more benefit from the inductive than the deductive method, we shall spare no effort in the attempt to extract from practitioners, clinical reports of all their most interesting and instructive cases.

" Careful observation makes a skilful practitioner but his skill dies with him. By recording his observations he adds to the knowledge of his profession and assists, by his facts, in building up the solid edifice of Pathological Science. We have too long accustomed ourselves to a respectful following of the sister profession. It is time we accepted the position of independent workers in the field of comparative pathology. We must make our own observations, collect our own records, and then compare notes with others. The facilities for *post-mortem* examination on our patients are not neglected to the extent some suppose. In town and country our practitioners, often under very disadvantageous circumstances, see what lesions exist in the dead animal and compare them with the symptoms exhibited during life—correcting or verifying their diagnoses as the case may be. Individually they learn. One step further we invite them—record their observations and we all learn."

We hope that these words of our illustrious founder may stir the consciences of those of our readers who are in private practice! Even to-day we receive far fewer clinical communications than could be wished.

A delicious example of the dissimilarity between July 14th, 1888, and now, is illustrated in the original " Notes and News " column when an interview is quoted between Dr. Fleming and a representative of the STAR newspaper. It must surely be that in those days Mr. Registrar of the Royal College was of a less austere turn of mind than his successors, for in the interview Dr. Fleming is not only mentioned frequently by name, but finds it proper, modestly to extol his own prowess. " The following," writes William Hunting, " is an extract from the conversation:—

" 'Well, yes,' said the doctor, with becoming modesty, ' it is an important discovery, I think, and it does get rid of a very serious disease. The roaring in horses, or the puff, renders the most valuable horse practically useless. What makes it all the worse is that it is easily transmitted.'

" ' The disease is not a new one in horses—I suppose remedies have been tried before ? '

" ' The disease is very old indeed, and remedies have been tried by a number of professors, but all have failed to accomplish what I believe my cure will.' "

In one sense our founder proved himself to be less of a tactician in the editorial chair than in the surgery. He rashly invited criticism from his readers —and he received it. It may be that the profession in these days is more indulgent, or that it is less bellicose, but so far we have not received any such commination as that flung at William Hunting by the next post.

" I will be equally frank with you," wrote a correspondent. " Bar the three ' Clinical Notes ' (a bad heading by the way) there was not another article worth reading. I expected something pithy, something smart, and certainly looked for short crisp notes on matters of interest. Where are they ?

" Your printing is only middling, your paper abominable, and the editorial work, I mean the correction of proof and arrangement of matter most negligent. You must try again and you must do better."

The Editor was evidently blessed with that modesty which is the mark of a superior mind, and his only reply to this epistle was to acknowledge it as a well-merited castigation and to " confess that our first number was not a success." He asked his readers to pardon a beginner's faults and to bear with him until he was able to " profit by the flood of advice which has broken upon the head of the luckless editor." Could it be that the word " profit " suggests that this great veterinarian added a touch of irony to his other intellectual equipment ?

By happy coincidence the second issue of THE RECORD makes reference to the Fellowship, a question which very recently has been receiving the attention of the Royal College. It is observed that the Fellowship " seems to be steadily rising in the estimation of the profession." Sixty odd years afterwards the tables might be said to have turned in the sense that it is now required of the profession that they should " steadily rise in the estimation " of their examiners!

The further one looks into these very early issues of the journal the more frequently are encountered matters which have their exact parallel to-day. THE RECORD is sometimes reproached with being behind the farming press in the publication of topical items —though in the past few months we have tried to meet this deficiency. The same trouble was experienced by William Hunting, and in the issue of July 21st a correspondent wrote:—

" I received a letter from a client asking me if I would tell him what the new operation for roaring was, that he had seen mentioned in the London papers, and whether I could recommend it for his grey hunter that ' made a noise.' I was obliged to write and say I had not heard of it, unless he meant the operation of tracheotomy as performed by Mr. Jones. A few days after this I received the monthly periodicals and read Mr. Smith's paper. I felt rather annoyed that my client should know some weeks earlier than me, the latest novelty in our own veterinary practice."

In this connection we may observe that we find ourselves in very good company in being in the same boat as the first Editor. It will be our good fortune if we are able to follow, however modestly, the course he set from the first, and to build even a little upon the foundations he so firmly laid.

AN AUSTRALIAN VISITOR'S IMPRESSIONS

We are indebted to a correspondent for the following note.

Mr. J. B. Forsyth, an Australian member of the profession, has recently returned to New Zealand after a two years' stay in Britain. He found the standard of veterinary practice in England to be high and gained valuable experience, particularly in equine practice. He was specially impressed with the surgical work done at the Small Animal Hospital of the Royal Veterinary College, London.

He first spent a period at the Equine Research Station of the Animal Health Trust at Newmarket, studying the work done there, which included haemolytic jaundice in new-born foals, and parasitism in equines, and other more general cases in the clinical section.

He spent six months in Ireland studying veterinary problems relating to thoroughbred breeding, in addition to general horse work with both thoroughbreds and hunters. He also spent a period at the Irish National Stud during the height of the breeding season.

After leaving Ireland Mr. Forsyth spent two months in general practice in the south of England, and then took a two months' refresher course at Liverpool University under Professor Wright, concentrating mainly on the surgery of both large and small animals. He also worked for some months with the Ministry of Agriculture and Fisheries, and between times managed to visit a number of veterinary schools in England.

MINISTRY OF AGRICULTURE, VETERINARY INVESTIGATION CENTRE, EDINBURGH

Dr. J. A. A. Watt, B.SC., M.R.C.V.S., has been appointed Veterinary Investigation Officer at the Edinburgh and East of Scotland College of Agriculture, in succession to Dr. J. T. Stamp. Dr. Watt was formerly the senior member of the staff at the centre under the direction of Dr. Stamp.

GENERAL ARTICLES

A Survey of Canine Distemper

BY

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and
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(Department of Veterinary Pathology)
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Introduction

CANINE distemper was first recognised in Britain during the 18th century according to Jenner (1809), and aspects of that virus disease have since been described by many authors, yet despite their work many problems remain to be solved.

From a clinical point of view some early writings are still informative. Jenner (1809) described clinical and morbid anatomical signs and commented on the high incidence of nervous complications. Blaine (1817) and Youatt (1845) noted that the disease prevailed in young dogs, in which it was associated with ocular and nasal discharges, cough (sometimes of pneumonic origin), diarrhoea, fits, chorea and paralysis, and in most cases a grave prognosis was given. Under the conditions maintained in the experiments of Carré (1905) and of Dunkin & Laidlaw (1926) the clinical signs of distemper were usually less severe.

Following the work of Dunkin & Laidlaw, which led to methods of vaccination, there was a dearth of clinical papers on distemper in British literature. During, and after, the Second World War, however, certain continental communications described diseases which were thought to be atypical forms of distemper (Verlinde, 1946 ; Goret, 1950). It was also suggested that the frequency of nervous complications had increased and that vaccination was giving a lesser degree of protection (Winquist, 1950 ; Goret, 1950). In 1948, in Britain, McIntyre, Trevan & Montgomerie claimed to have distinguished distemper from certain canine encephalitides, notably one which they termed " hard pad " disease. This work stimulated a renewed interest in distemper type infection as was shown by papers from a number of countries which purported to describe " hard pad " disease (Cohrs, 1951 ; Scheitlin *et al.*, 1951 ; Furumoto, 1952 ; Van den Akker, 1952 ; Nijland, 1952 ; Tiunissen, 1952). Whittem & Blood (1950) noted hyperkeratosis of the pads of the feet in cases of canine encephalitis, but Fankhauser (1951), who also observed changes in the pads of encephalitic dogs, regarded them as non-specific and did not support the recognition of a distinct " hard pad " disease.

Clinical, pathological and immunological studies of a canine encephalitis virus isolated in the United States was carried out by Burkhardt *et al.* (1950), Koprowski *et al.* (1950), Cabasso & Cox (1952) and Cabasso (1952). This strain produced demyelination in the pons, medulla and especially the cerebellun as described in " hard pad " disease but cross-immunity experiments in the ferret indicated that the virus was related both to distemper virus and to a " hard pad " strain.

Green (1941) reviewed some of the characters of the distemper virus and its relationship to the tissues, attributing the varieties of clinical distemper to differences of tissue specificity among viruses of the group. Goret (1950) suggested that the virus of canine distemper may become modified to produce atypical forms of the disease and believed that failure of immunisation could result from infection by such a strain. Only 32 per cent. of Goret's cases yielded virus which produced clinical signs like those due to the Laidlaw-Dunkin strain, but he did not encounter a case of " hard pad " disease. Variation in virulence among distemper viruses was evidenced by a field strain (Glasgow 123) studied by Mansi (1951), who described unusually severe clinical signs in experimentally infected dogs and ferrets. This strain, however, was immunologically indistinguishable from Laidlaw-Dunkin virus, Burroughs Wellcome " hard pad " virus and Green's ferret-adapted virus ; and when given parenterally to ferrets it produced " typical " catarrhal distemper after five passages (Ministry of Agriculture and Fisheries Report on Animal Health Services, 1953). Larin (1954) presented a classification of strains of distemper virus based upon variations in clinical signs produced in ferrets, and upon differences in the value of cross-immunity shown by these strains.

Because of the view that strains of distemper virus may vary in virulence and possibly in their effects upon the tissues, the term " distemper complex " has come into use. Whitney & Whitney (1953) in their comprehensive review of the literature on canine infections claimed a wider significance for the " distemper complex " by including in it a number of canine diseases of different aetiology, *e.g.*, canine contagious hepatitis, leptospirosis and toxoplasmosis, because of clinical similarities which may exist between these conditions.

Present Investigation

This survey is an attempt to correlate the clinical and pathological findings in 50 dogs which were diagnosed clinically as suffering from distemper.

The series of 50 dogs was selected over a period of 18 months from the cases which attended a clinic serving poor persons in Glasgow. Every case which attended the clinic showing signs which, from past

experience, were regarded as diagnostic of distemper among dogs in Glasgow was provisionally selected for this series. Clinically they appeared to be suffering from one disease which was called distemper, irrespective of the presence or absence of hyperkeratosis, and ultimate inclusion of a case in the series depended on the opportunity for a *post-mortem* examination being fulfilled. The clinicians were prepared to be informed that on autopsy the supposed clinical entity could be associated with various and unrelated disease processes, though in fact the pathological evidence obtained points to a single condition.

The diagnosis of clinical distemper was made in 41 cases which showed four of the following signs :—

1. Respiratory involvement. A cough was taken as signifying involvement of the respiratory tract whether or not accompanied by quickened or exaggerated breathing.
2. Diarrhoea.
3. Catarrhal discharge at eyes and/or nose.
4. Hyperkeratosis of the pads.
5. Nervous signs. (Fits, chorea, or a varying degree of posterior paralysis.)
6. Duration of at least three weeks.

In view of the diagnostic importance attached to the presence of typical hyperkeratosis of the pads, a further nine cases which showed this sign plus only two of the above list were included to make the total of 50 cases.

It is considered that the above criteria are the minimum on which a reliable diagnosis may be based.

It must be emphasised that the above clinical signs were selected carefully after scrutinising the case histories of the 50 cases in this series, and further work including pathological examination of many more cases confirmed their reliability.

PART I.—CLINICAL

Before dealing systematically with the 50 cases under review a general composite description of the disease will be given which is based on many more cases than are included in this series.

In Glasgow it appears that most dogs become affected before seven months of age.

Common early signs include a varying degree of dullness, inappetence, shivering, ocular and nasal changes, and less often a bout of vomiting or hysterical fits. The dullness is seldom marked, being noted by the owner as listlessness, which may disappear at exercise. Eye changes at this stage are mainly congestion of the conjunctivae, with slight serous exudation, accompanied by photophobia. The nose, too, may show slight serous exudate. At this stage an acute moist otitis externa is an occasional feature.

Usually within the following fortnight the ocular and nasal exudates tend to become purulent (Fig. 1) and alimentary and respiratory complications arise. The ocular discharge may cause loss of hair around the eyes, and the margin of the lids may become inflamed (Fig. 2). A diffuse keratitis is uncommon, though the incidence may be much higher in some outbreaks, when it is occasionally associated with corneal ulceration.

Excessive salivation is responsible for a wet appearance around the mouth in many cases and inflammation

FIG. 1.—Mongrel pup showing crusted exudate at nostrils.

of the edge of the lips may occur particularly towards the commissures.

Inappetence may become more marked, and diarrhoea frequently occurs. The fluid faeces tend to be light in colour and only occasionally contain blood. Diarrhoea is often difficult to cure, tends to [illegible]r and the dog loses weight.

A cough frequently develops, soft initially, and sometimes becoming harsher and accompanied by expe[illegible]ra-tion. At this stage the owner may present the dog with the suggestion that it has "a bone in the throat." In

FIG. 2.—Collie cross pup showing inflamed bare eyelids, serous ocular and nasal discharge.

the majority of cases auscultation and percussion of the chest reveal nothing of significance. In others respiratory movements are obviously accelerated, percussion fails to distinguish areas of consolidation, but on auscultation harsh broncho-vesicular sounds can be detected. Rales are uncommon. In most instances the signs of severe lung involvement lessen within a week, although some cases may die at this stage. About the end of this period, or during the following week, many cases develop obvious hyperkeratosis of pads (Figs. 6 and 7) and possibly the nose (Figs. 3 and 5). Once hardening of the pads starts, it progresses very rapidly and in a few days the maximum may be reached, though

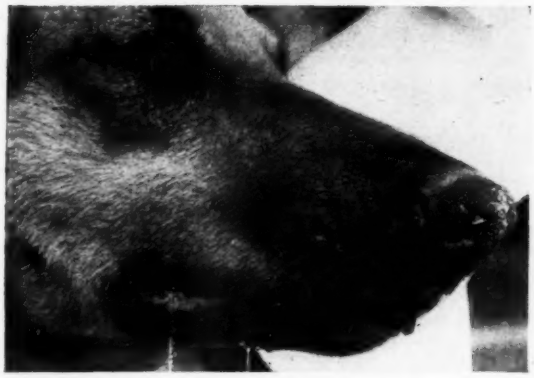

FIG. 3.—Alsatian, nine months of age, showing purulent ocular and nasal discharge, hyperkeratosis of the nose and hypersalivation.

this can vary much in degree, as is well described by McIntyre *et al.* (1948). The carpal pads may also show hyperkeratosis (Figs. 6 and 7).

The course of the disease is approximately one to two months. Nervous complications tend to occur towards the end of the illness but if they fail to develop, recovery is usual. In the majority of cases, however,

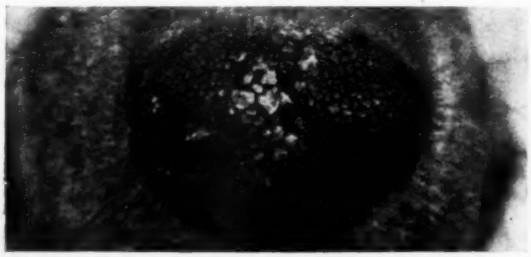

FIG. 5.—Same dog as in Fig. 3, showing hyperkeratosis of nose and crusted nasal discharge.

nervous complications occur, the commonest clinical manifestations of which are epileptiform convulsions and chorea. "Epileptiform convulsions" are not specific to distemper, and may vary in degree. The mildest convulsion is manifested by rapid clonic spasms of the muscles of mastication with hypersalivation and sharp jerky nodding or side to side movements of the

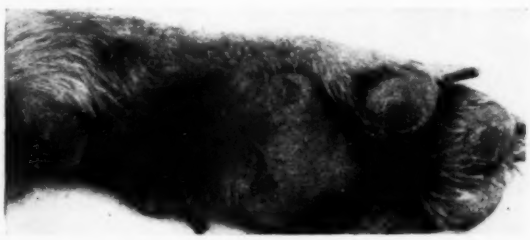

FIG. 6.—Same dog as in Fig. 3, showing "corns" on digital pads and hyperkeratosis of carpal pad.

FIG. 4.—Same dog as in Fig. 3, showing purulent conjunctivitis.

head without loss of balance. In the more severe form, in addition to mouth and head spasms, balance is lost and the affected dog falls on its side, paddles its limbs and frequently defaecates and micturates involuntarily. The muscular spasms regress in a few minutes, but the dog may be unable to rise for some time, and when it does so, appears dazed and ataxic. Vision may be affected for a short time. Occasionally before or after such a convulsion the animal may show some signs of hysteria. The interval between epileptiform convulsions is highly variable, from minutes to days, and tends to become shorter as the disease progresses, until natural death or euthanasia ensues.

"Hysterical fits," which are more common in the earlier stage of illness, again are not specific to distemper. They are distinguished clinically on the grounds that in the hysterical fit the main signs are wild running and yelping as if in great fear with occasional termination in collapse and convulsive movements. By "chorea" is meant the involuntary (and usually permanent) rhythmic clonic spasm of a muscle or muscle group which is well recognised by clinicians as a sequel to distemper infection. Any muscle group may be affected, those of the limbs and the head being common sites. Incipient chorea of a limb is often preceded by lameness for a few days. Whining often accompanies the onset of chorea and may be particularly noticeable to the owner during the night.

Following epileptiform convulsions and chorea in order of incidence of nervous complications comes posterior inco-ordination (ataxia). This may vary in degree from a slightly swaying gait with difficulty in balancing when turning sharply to complete paralysis of both hind limbs. When an affected animal is able

FIG. 7.—Terrier cross showing hyperkeratosis of moderate degree on central digital pad and readily peeled cap of keratin partially removed from carpal pad.

to walk it tends to trail its hind feet to some extent, and this may be evidenced by abnormal wearing of the anterior aspect of the nails.

Rarer nervous complications are blindness, deafness and self-mutilation. The latter is usually associated with chorea of the part attacked, and a dog may rarely amputate its own tail or one or more toes. During the attack, or sometimes apparently without the dog's interference, an ulcer develops, usually oval in outline, with gently shelving edges. Such a lesion involves skin, subcutis and underlying muscle, and shows little or no tendency to heal.

The temperature tends to be above normal, but constant high fever is unusual. Late in the course of the disease a rise in temperature may precede nervous complications. The heart and pulse rates are usually accelerated.

Systematic Findings in the 50 Cases Under Review

No attempt is made to describe in complete detail every abnormal sign shown, but rather to record from the 50 case histories the incidence of some of the more important features. Since there was no possibility of hospitalising those dogs and since some of the signs could not always be observed during the short period of examination, observation by the owner was relied on.

Breed

The three commonest breeds noted in this survey were Fox Terrier, Collie (both including a high proportion of crosses) and Alsatian. No particular importance is attached to this observation since these are the commonest breeds attending the clinic in Glasgow as based on a review of 500 unselected cases.

Sex

Approximately two-thirds were male, a similar proportion to that found in a series of 300 unselected cases.

Age

TABLE I
AGE TO NEAREST MONTH OR YEAR WHEN FIRST EXAMINED

	Months								Years				
	2	3	4	5	6	7	8	9	2	3	4	5	6
Number of dogs	1	9	6	13	8	3	3	4	1	1	0	0	1

It may be noted that while the age incidence ranged from two months to six years, most dogs were affected before they reached six months. The six-year-old dog had lived in the town for only nine months, but the two- and three-year-old dogs had apparently done so all their lives, and the elder succumbed soon after a major abdominal operation.

Duration of Illness

This was an approximation based on careful questioning of the owner plus the period of illness observed during attendance at the clinic.

TABLE II
DURATION OF ILLNESS TO NEAREST WEEK

	Weeks												
	1	2	3	4	5	6	7	8	9	10	11	12	Indefinite
Number of dogs	0	3	7	9	6	5	3	8	0	0	0	1	8

The course can be seen to range commonly between three and eight weeks.

Emesis

TABLE III
PERCENTAGE AFFECTED

Frequent vomiting	Occasional vomiting	No vomiting	Unknown
6	44	48	2

It will be seen from Table III that nearly half the cases did not vomit and of those which vomited few did so with any great frequency. Only true vomiting is recorded above, although a higher incidence might be recorded if care were not taken to differentiate between this and the expectoration of mucus.

Character of faeces

Diarrhoea, which was one of the criteria for selection, occurred in 74 per cent. of cases, though its duration was variable. In a few dogs it was extremely obstinate. Commonly the stools were lighter in colour than usual, and infrequently contained flecks of blood.

Respiratory Signs

(*a*) Nasal discharge. Thick yellow or greyish exudate was present at the nostrils of 38 per cent. of cases, and was usually preceded by an abnormal amount of serous fluid. The purulent type of discharge varied in amount from profuse to a relatively small encrustation at the nasal alae, which were sometimes ulcerated. This discharge rarely appeared until the animal had shown clinical illness for three weeks.

(*b*) Cough. This was a cardinal feature of selection (72 per cent. affected).

(*c*) Respiratory movements. These were grossly abnormal in at least 26 per cent. of cases at some time during the course of illness. Though harsh bronchovesicular sounds were evident, without any adventitious rales, auscultation and percussion failed to reveal any definite patches of consolidation.

During the present series radiographic examination was not attempted, but such examinations have since detected lung abnormalities in similar cases.

Eyes

Congestion of the conjunctivae was exceedingly common and in 46 per cent. of the cases was accompanied by variable degree of purulent exudate. Keratitis was not present in any of this series.

Temperature

Most cases showed fever, which was considered to be indicated by a temperature of 103° F. or above.

A few dogs showed pyrexia which remained almost constant, while a few others never had raised temperatures when presented for examination. The average temperature was 103° F.

Epidermal Changes

(*a*) Skin. Obvious change was noted in a few cases which showed excessive exfoliation of small epidermal scales. This tended to be widespread, without loss of hair as a rule, although occasionally there was bareness around the eye. Whilst moist otitis externa sometimes accompanies the early stage of distemper, it did not occur in the present series.

(*b*) Pads. Hyperkeratosis of the pads occurred in 82 per cent. of cases and on the average became appreciable during the third week of illness. The change varied from hardening of a thin superficial layer to gross thickening with hardening and fissuring of the pads. One of the earliest changes noticed was a thickening at the periphery of the pad, which was palpable as a decided edge, though the pad itself yielded when compressed from the side.

When the patient had been walking on a wet surface for some time before examination, the hardening tended to be obscured. At times, though the digital pads were grossly normal, the carpal pads showed marked thickening and the hyperkeratinised layer could be stripped off readily without pain to the dog, the underlying surface appearing normal (Fig. 7). Examination of this site was considered a useful diagnostic procedure.

(*c*) Nose. Marked hyperkeratosis was recorded in 28 per cent. of cases.

Nervous Signs

The incidence of nervous complication was high, 89 dogs (78 per cent.) showing it in one or more forms.

Early in the course of the disease only 10 dogs were affected, most of them taking fits of hysterical type. At this stage epileptiform convulsions were less common and chorea and posterior inco-ordination absent. There commonly followed a period free of nervous trouble.

Later in the course of illness all but one of those which had shown earlier trouble and a further 29 showed nervous involvement. Most of the dogs died or were destroyed because of epileptiform convulsions with or without chorea. Posterior inco-ordination seldom occurred without other nervous signs.

Treatment

Symptomatic treatment was used in every case and this sometimes included penicillin for the pneumonitis and sulphonamides for diarrhoea. A variety of other therapeutics was used, including "C.F.9" (Edenhall Laboratories), "Amphotropin" (Bayer), chloramphenicol, "hard pad" antiserum and distemper vaccine (Burroughs Wellcome & Co., Ltd.) and vitamins B_1 and B_{12}. It is hoped to deal more fully with this aspect of the work at a later date.

Part II of this Paper, entitled Pathology, will be published next week.

The Occurrence of the Fluke *Plagiorchis Notabilis*, Nicholl 1909 in the Small Intestine of a Domestic Fowl *(gallus gallus)*

BY

C. HORTON-SMITH

and

P. L. LONG

NO reference can be traced to the occurrence of any species of *Plagiorchis* (syn. *Lepoderma*) in domestic fowls in Britain. There are, however, two records of *P. arcuatus* Strom, 1924, occurring in the oviducts of fowls in Russia and Germany (Strom, 1924) and in material collected from Estonia (Sikkut, 1933). Foggie (1937) and Rees (1952) described flukes from turkey poults. Foggie found *P. laricola* Skrjabin, 1924 (provisional identification) in Northern Ireland and Rees recorded *P.* (*Multiglandularis*) *megalorchis*, N. Nour and Jordan (1953) described the same species from poults in S. Radnorshire.

In June 1954, a four-and-a-half-month-old R.I.R. pullet, which had been killed in poor condition, was received from Montgomeryshire for *post-mortem* examination. In our examination of the alimentary tract 35 flukes belonging to the genus Plagiorchis were collected from the small intestine, together with some Ascaridia and Capillaria. The flukes were sexually mature. Specimens submitted to Dr. S. Prudhoe, of the British Museum (Natural History) were identified as *P. notabilis* Nicoll, 1909. Nicoll (1909, 1923) recovered this species from the intestines of the Blue-headed Wagtail (*Motacilla flava* Linn.) and Rock Pipit (*Anthus petrosus* Montague). The metacercariae are found encysted in the larvae of Chironomid and other flies.

The infestation was associated with a marked mucoid reaction in the intestine of the fowl but no other abnormality was found. Unfortunately, we have had no opportunity of examining other fowls from the same source.

We would like to express our thanks to Professor J. J. C. Buckley, Mr. M. Crawford and to Professor R. T. Leiper, F.R.S., for their interest and guidance through the literature.

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The Effect on the Milking Cow of Transport by Lorry as Shown by the Total and Differential Cell Counts of the Milk

BY
IAN MACADAM

ACCORDING to the work of various investigators the cell content of milk is abnormally high where there is an inflammatory condition of the bovine udder (Cherrington *et al.*, 1933; Hopkirk, 1933; Malcolm *et al.*, 1942; Malcolm & Campbell, 1946, and McFarlane *et al.*, 1949). However it had been observed by McFarlane *et al.* (1949) that milk drawn from a cow after she had been transported by lorry to an abattoir showed a marked increase in cell count as compared with milk taken the previous day at the farm. As this increase in cell count may have been due to pathological changes in the mammary gland as a result of the traumatic effect of the transportation, it was decided to determine whether such changes in the milk under these conditions were of common occurrence.

Methods

Milk samples were drawn from 30 quarters of nine cows before and after transport of the animals by lorry to abattoirs. No specimens were drawn from the remaining six quarters as they were blind, atrophied or affected by purulent mastitis. The cows were taken from different farms situated from about 10 to 20 miles from the abattoirs. Seven of the cows were Ayrshires, two were Friesians and all were in the fifth or a later lactation. Milk smears were prepared by the method of Prescott & Breed (1910) and stained by the procedure of Sheehan & Storey (1947) as modified by Blackburn & Macadam (1954). The total cell content per ml. was determined and also the proportion of the cells which were polymorphs.

Histological examination was made of the quarters *post-mortem*. For this purpose up to 12 blocks of tissue were cut from the larger quarters and six from the smaller quarters; 282 blocks in all were examined. Sections from the blocks were stained by haematoxylin and eosin and by Gram's method. Mastitis was classified as acute, sub-acute or chronic, and as mild, moderate or severe. Each lesion was placed in one of nine categories. It was found that in many cases there was great variation in the type and in the severity of lesions in different parts of the same quarter. This confirmed the findings of Scholl & Torrey (1931) and of Spencer & McNutt (1950).

To enable comparisons to be made of the various pathological lesions found in different quarters an arbitrary system of scoring was introduced, which was based on the extent and severity of the lesions in each quarter. The pathological changes in the duct system were considered separately from those of the alveolar system and these changes were recorded in 16th parts of each section of tissue. From the records of all sections of each quarter examined averages were calculated, representing the summary of the lesions in 16th parts of the whole quarter. These latter 16ths were the units for scoring purposes. The following table indicates the system of scoring for each 16th part showing inflammation.

TABLE I
SYSTEM OF SCORING OF PATHOLOGICAL LESIONS

Duct system score	Category of lesion	Alveolar system score
3	Mild acute	3
6	Moderate acute	6
12	Severe acute	12
2	Mild sub-acute	4
4	Moderate sub-acute	8
6	Severe sub-acute	12
1	Mild chronic	2
2	Moderate chronic	4
3	Severe chronic	6

The final score for each quarter is the total of scores for 16th parts affected by mastitis. The above system of scoring was based on the opinions of the writer as to the importance of the lesions in contributing to the total number of cells in the milk before slaughter. It was considered that, in the lactating quarter, the total epithelial surface of the duct system is less than that of the alveolar system. Hence sub-acute and chronic lesions of the alveolar system were given double the score of similar lesions of the duct system. However, the same score was given for acute lesions in both systems, owing to the fact that there is a temporary retention of many cells within the lumen of an alveolus when secretion is hindered by acute inflammation of the epithelial cells lining the alveolus. In acute inflammation of the duct system most of the cells arising from the lesion are carried down by milk secreted by adjacent alveoli.

Bacteriological examinations were made of specimens of tissues from all 30 quarters, and of milk samples from most of these quarters. Cultures were prepared on blood agar and on Edwards' crystal violet agar, and the organisms were identified by means of the coagulase and precipitin tests and by their biochemical reactions.

Results

In the 30 quarters examined the cell counts of samples taken at the abattoir were on the average 4.6 times those of samples taken at the farm. In two cases the counts were slightly decreased, but in five instances they were doubled, in nine they were increased up to three or four times, and in 14 cases from 6 to 10 times. The quarters were arranged in

five groups, according to the total cell counts of milk samples collected at the farms. The following table shows the average cell counts per ml. of samples of milk taken before and after transport of the cows to the abattoirs.

The table shows that the effect of the transport on the cows, as indicated by the relative increase in the total cell count of the milk, was almost twice as great in the first three groups, *i.e.* in the 15 quarters with milk having less than 500,000 cells per ml., as in the remaining 15 quarters with milk having more than 500,000 cells per ml.

TABLE II
AVERAGE INCREASES OF TOTAL CELL COUNTS

Group number	Range of counts	Number of quarters	Average count before transport	Average count after transport	Average times increased
1	0– 99,000	7	54,000	380,000	6·6
2	100,000–249,000	4	165,000	780,000	4·7
3	250,000–499,000	4	310,000	2,050,000	6·7
4	500,000–999,000	6	610,000	1,920,000	3·1
5	1,000,000 or more	9	3,660,000	10,600,000	3·7
		30			

The Proportion of Polymorphs

As the differential cell count was carried out as well as the total cell count, it was possible to determine the extent to which the above increase in cell count was due to polymorphs. Of the 30 quarters examined, only two were apparently normal. Milk from these at the farms contained 50,000 and 80,000 cells per ml. Polymorphs constituted 40 and 58 per cent. of the respective totals of these cells. After transport, samples contained 320,000 and 800,000 cells per ml., of which 44 and 87 per cent. respectively were polymorphs. Of 13 quarters with acute lesions 11 secreted milk taken at the farm, in which from 58 to 88 per cent. of cells were polymorphs. It appeared from these 13 cases that increased proportions of polymorphs in the cells of milk drawn after transport were associated with the more extensive acute lesions, because seven of these quarters with an average score of 26 for acute mastitis secreted milk in which the average proportion of polymorphs increased from 64 to 80 per cent. as a result of transport; the remaining six quarters with an average score of only 12 for acute mastitis, secreted milk in which the average proportion of polymorphs fell from 70 to 62 per cent. after transport. The percentages of polymorphs for each of the five groups of quarters averaged respectively before transport 52, 66, 62, 55 and 66, while after transport they were 60, 69, 61, 54 and 73. In the quarter with the most extensive and most severe acute lesions, the polymorph percentage increased from 58 to 92 as a result of the journey.

Pathology

The following table shows the average scores representing the pathological changes of the quarters in each of the foregoing five groups.

The table shows that there is, in general, a positive relationship between the total cell count of milk and the pathological state of the mammary gland. This finding is in agreement with those of Cherrington *et al.* (1933), Hopkirk (1933), Malcolm *et al.* (1942) and McFarlane *et al.* (1949). The counts of over 1,000,000 cells per ml. were found in milk from nine quarters, which all showed extensive mastitis. Eight of the nine quarters showed acute mastitis.

The relative increases in cell count after the journey appeared to be greater in the normal udder and in quarters with little mastitis, than in quarters having milk in which the cell count was already high and which showed more mastitis. An outstanding exception was the quarter most affected by mastitis, having a total score of 168, of which 90 represented acute mastitis. Both of these scores are higher than corresponding scores of other quarters. The cell count of milk from this quarter increased from 1,500,000 to 15,000,000 cells per ml. as a result of the transport.

Cell Counts in Samples Collected Post-mortem

In 21 of 26 cases, milk taken from quarters a few minutes *post mortem* contained more cells than milk

TABLE III
PATHOLOGICAL FINDINGS

Group number	Range of cell counts	Number of quarters	Average scores representing lesions			
			Total	Chronic	Sub-acute	Acute
1	0– 99,000	7	16	7	8	1
2	100,000–249,000	4	42	8	33	1
3	250,000–499,000	4	55	21	20	14
4	500,000–999,000	6	42	18	20	4
5	1,000,000 or more	9	130	37	64	29
		30	285	91	145	49

taken from these quarters when the cows arrived at the abattoirs. In general, the increase was one-and-a-half times; in a few cases counts were doubled. The proportions of polymorphs appeared to be little affected.

Results of Bacteriological Examinations

Of 30 quarters examined, two were found to contain *Streptococcus agalactiae*, and yielded milk at the farms having 2,000,000 cells per ml.; six contained coagulase-positive *Staphylococcus aureus* and of their counts one was 35,000, four were from 1,000,000 to 3,000,000, and one was 15,400,000 cells per ml. Eight quarters contained coagulase negative staphylococci and produced milk having from 50,000 to 550,000 cells per ml. Fourteen quarters contained no mastitis organisms; milk from seven of these had between 30,000 and 200,000 cells per ml.; milk from five had between 530,000 and 730,000; and milk from the last two had 1,500,000 and 3,480,000 cells per ml.

Conclusions

Quarters which were only slightly affected by mastitis produced milk of which the total cell count, after transport of the cows by lorry, increased on an average about six or seven times. On the other hand, quarters with extensive mastitis showed an average increase in total cell count of about three or four times, after transport of the cows. In general, the quarters with more extensive acute mastitis show greater increases in the proportion of polymorphs in the milk. The reasons for the increased cell counts of the milk samples taken after transport of the cows are obscure. It is possible that the higher counts may reflect increased pathological changes in the glands, caused by the traumatic effects of the transport of the cows. However, in the case of the two apparently normal quarters, the increases in cell counts were of from six to ten times, despite the finding of no pathological tissue in the sections. It must be borne in mind that only a small fraction of the entire bovine gland was examined, and it might be that lesions were missed.

It may be that the jolting of even normal udders during the journeys caused desquamation of epithelial cells and diapedesis of polymorphs at rates much faster than normal. In acute lesions it might be expected that the passage of polymorphs into the luminae would be further increased, and this is borne out by the greater increases in the proportions of polymorphs in the milk of those quarters containing greater amounts of acute mastitis. When it is considered that a delicate elastic fabrication, such as the udder of the milking cow, may contain several gallons of milk under pressure, it is reasonable to suppose that alveolar damage will ensue from the constant violent agitation of the udder during transport of the cow by lorry.

Summary

(1) Study of cell counts of milk samples and the pathology of 30 quarters, confirms the findings of past workers that, in general, high cell counts in milk are associated with marked pathological changes.

(2) As a result of the transport by lorry of nine cows, increases in cell count occurred in the milk of 28 of 30 quarters examined. On average, the counts increased about fivefold.

(3) Mastitis lesions were present in 12 of 14 quarters in which no mastitis organisms could be found, and also in eight affected with coagulase-negative staphylococci. In general the lesions in these 20 quarters were not nearly so extensive as those in eight quarters affected with *Streptococcus agalactiae* and coagulase-positive *Staphylococcus aureus*.

Acknowledgment.—The investigation was carried out with the aid of a grant from the Agricultural Research Council.

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NEW PROFESSOR APPOINTED AT GLASGOW

Mr. Donald S. Hendrie, Principal of the West of Scotland Agricultural College, has been appointed to the recently created Chair of Agriculture in Glasgow University. Before being appointed to the Principalship of the West College, Professor Hendrie was Agricultural Adviser to the High Commissioner for the United Kingdom in New Zealand. He was born at Galston, in Ayrshire, and was educated at Galston, Kilmarnock, Glasgow University and the West of Scotland Agricultural College. He had a distinguished academic career and was awarded the Weir of Courance Gold Medal, first place medals in his second and final years and the John Speir Memorial Prize in Dairying. With the highest aggregate in the N.D.A. examinations he took the Ministry of Agriculture and Fisheries Fream Prize. Among his previous appointments were Assistant Lecturer in the West of Scotland Agricultural College, District Lecturer in Agriculture in North Yorkshire, and County Agricultural Executive Officer in the North Riding of Yorkshire, from which post he went to New Zealand.

Professor Hendrie will continue to be Principal of the West of Scotland Agricultural College.

CLINICAL COMMUNICATION

Acute Laminitis in the Horse. Treatment with Adrenocorticotropic

M. R. LAWSON

Subject

A 12-year-old pony.

Examination

On examination the animal moved with great difficulty and was unable to rise without support. In progression it adopted the typical laminitis gait placing the heel to the ground first and lifting the toe very quickly. This occurred on all four feet. Temperature was 104.5° F.; the pulse, taken at the digital artery, was frequent and hard-running at 84 per minute. Respirations were accelerated and considerable heat was detected in all four feet. Slight percussion on each of the four feet evinced great pain in each limb.

Obvious diagnosis was made of an acute laminitis, and experimental treatment with adrenocorticotropic hormone was adopted. The reason for the adoption of the experimental treatment was, in the main, due to the reported effect of ACTH in cases of drug sensitivities, allergies and urticaria and also the fact that substances of the 11-desoxycorticosterone variety, which are increased by the intramuscular injection of ACTH, exercise a controlling influence with regard to the retention of sodium chloride and the excretion of potassium, thus having a direct influence upon the osmotic pressure exerted by cellular tissue and by blood.

Treatment

The pony was removed to a loose-box, the shoes on each of the four feet removed, and the box well bedded-down with peat moss. Fifty international units of ACTH (each 10 I.U. dissolved in 1.2 c.c. of sterile water) were injected intramuscularly in the neck, left side. The groom was instructed to give the patient bran mashes. The following day the case was reviewed and the animal was shown to be much improved. The temperature and respiration were normal and the heat which had existed in the feet the previous day had subsided and was now absent. With caution the animal was given a slight amount of exercise, and it was surprising to see how free the movement had become in little over 12 hours. It was noticed that the pony now placed its feet firmly and solidly on to the ground and did not walk heel first.

Twenty international units of ACTH were injected intramuscularly in the right neck, the patient was kept on bran mashes and remained in the loose-box. The case was reviewed again in 24 hours and the pony was found to be standing normally, showing no signs of pain, either on standing or on movement. The feet were closely examined and there was no pain on percussion. The pulse at the digital artery was normal. The pony was given a thorough examination for lameness and although such lameness had been seen 36 hours previously, it was now impossible to detect the slightest degree of pain on movement at the walk and the trot.

The case has been subsequently followed and there has not been a recurrence of the laminitis. The animal has returned to normal life.

The last examination of the four feet has shown that there has been no dropping of the sole, and no distortion of the toe. It would appear that an alteration in the osmotic pressure of the local tissue and the blood was brought about quickly enough in this case to prevent any damage being done to the laminae of the hoof.

Acknowledgment.—The author wishes to thank Osmond Pharmaceuticals Ltd., for the free supply of ACTH used in this case.

Current Literature

ABSTRACTS

Antibiotic Therapy in Anthrax. BAILEY, W. W. (1954). *J. Amer. vet. med. Ass.* **124.** 296–300.

The author states that 212 out of 6,480 cattle (3 per cent.) and eight out of 51 horses developed symptoms of anthrax after inoculation with anthrax vaccine. The cases occurred from one to six months after inoculation. Four of the animals were found dead, but in most cases there were symptoms of anorexia, subcutaneous swellings—which usually involved a fore limb—and lameness. Pyrexia was not a constant feature. Five cows aborted during the first days of their illness.

Cases were treated with penicillin, oxytetracycline, or a combination of the two. Penicillin was usually given as procaine benzylpenicillin at a dosage rate of 2,000,000 to 9,000,000 units intramuscularly once daily. Oxytetracycline was given intravenously dissolved in normal saline, animals of 700 lb. or more usually received an initial dose of 2 grammes followed by 1 gramme once daily, horses were given 4 grammes followed by 2 grammes every 8 or 10 hours.

Each of these three treatments was used on some 60 to 80 animals, and each gave a recovery rate of 96 to 97 per cent. Two animals recovered without treatment.

The author considers that oxytetracycline, used alone,

is the treatment of choice. He gives details of eight typical cases in cattle and of one in a horse.

(It is difficult to assess the author's results as the three treatments were not used on comparable groups of animals and some details of the results are omitted. It appears, however, that penicillin, used alone, was almost as effective as oxytetracycline. It would be interesting to compare these results with those obtained in naturally occurring cases of anthrax.

E. A. G.

Comparison of Intramuscular Repository Procaine Penicillin with Oral Penicillin and Probenecid.

RUSSO, H. F., BUNN, C. E. E., MILLER, A. K., & SCHEIDY, S. F. (1954). *J. Amer. vet. med. Ass.* **124**. 284–289.

Penicillin blood level studies were carried out in six dogs of 12 kg. bodyweight and in three of 20 kg.

The penicillin preparations used included :—

Potassium penicillin 100,000 units orally,
Potassium penicillin 100,000 units intramuscularly,
Procaine penicillin 300,000 units intramuscularly,
" Remanden " tablets for oral administration, consisting of Potassium penicillin 100,000 units + Probenecid 0·25 g.

Probenecid is a substance which competes with penicillin for excretion through the kidney and thereby delays the excretion of penicillin and prolongs the period of " penicillinaemia."

One tablet of Remanden produced a peak penicillin blood level of about 0·65 u./ml. after one hour followed by a fall to about 0·1 u./ml. in eight hours. When, however, the two substances in the tablet were administered separately, though simultaneously, somewhat lower penicillin levels were produced and a period of therapeutic concentration of penicillin of less than six hours was produced. There is no evidence as to whether this difference was significant statistically.

When 100,000 units of potassium penicillin was given intramuscularly at the same time that Probenecid 0·25 g. was given orally a high initial penicillin blood evel of about 3 u./ml. was produced followed by a gradual fall to 0·1 u./ml. in five hours, thus the advantage of injecting the penicillin was very plain.

Eight-hourly treatment of dogs with single tablets of Remanden produced a succession of peaks and depressions in the penicillin blood level but in three dogs this remained above the therapeutic threshold of 0·03 u./ml. throughout 32 hours—a period covered by four doses.

Injections of 300,000 units of procaine penicillin into six dogs produced high initial peak levels of about 3 u./ml. within two hours followed by a fall to subtherapeutic concentration in about 30 hours. The concentration could be sustained between 0·2 and 2 u./ml. by following the injection with eight-hourly doses of Remanden.

The authors conclude that for infections of slight to moderate severity the oral treatment of dogs with Remanden tablets is likely to provide an effective treatment, whilst for more severe infections it is advisable to initiate Remanden therapy with an injection of penicillin.

Note.—The original article is confusing because procaine is misprinted for potassium in the text referring to Graph 1. The above abstract deals with the true slituation. J. Tw. E.

TURKEY DEMONSTRATION CENTRE

The importance of Norfolk as a turkey rearing and fattening county needs little emphasis, and it is not surprising that when the Ministry of Agriculture commissioned the establishment of a Turkey Demonstration Centre it was decided to locate this at the Norfolk Agricultural Station at Sprowston, on the outskirts of Norwich. The Centre, which has been financed under the American Conditional Aid Scheme, is the first of its kind in this country, and its primary purpose will be to demonstrate that a flock of turkeys can be rapidly improved by selective breeding on family lines.

The Centre was officially opened on September 8th by Mr. G. R. H. Nugent, M.P., Parliamentary Secretary to the Minister of Agriculture. In his speech, Mr. Nugent said that commercial turkey farmers were making increasing use of veterinary aid and of the drugs provided by veterinary research. He considered that the greatest need of the industry was to develop an all-the-year-round market for turkeys at a price which would compete with that of red meat.

The Centre was then open for inspection by the public, and it was interesting to see that a completely intensive system is being used. The poults spend their first three or four weeks in wire floored brooders, and are then transferred to solid floored pens littered with sawdust and shavings and heated by infra-red lamps. At six to eight weeks old the poults are moved to open-sided pens where they remain, on straw, until disposal. The young poults receive a high protein mash, but pellets are used from eight weeks onwards.

In the afternoon, a conference, organised by the N.A.A.S., was held in the Assembly Hall, Norwich. The first paper was by Mr. R. Feltwell, the Poultry Advisory Officer for Norfolk, who described, with the aid of coloured lantern slides, the wide variety of systems used for the rearing and fattening of turkeys. Mr. Feltwell also discussed the nutritional requirements of turkeys. He advocated the use of a starter mash containing 24 per cent. of best quality protein, falling to 18 to 20 per cent. for the 8- to 16-week period. Little is known of the turkey's requirements beyond this stage, but Mr. Feltwell suggested a protein level of 15 per cent., reduced to about 12 per cent. in the final " finishing " period. Speaking from the audience, Dr. McKay said that the moist, swollen grain given by this season's harvest would have a lower protein and trace element content than normal and that allowance should be made for this in compiling home mixed rations. The other two papers discussed the marketing of turkeys, breeding, and rearing, with special reference to market requirements.

The conference concluded with a brains trust or " gobble " in which the veterinary profession was represented by Dr. Norman Barron. A social evening was held afterwards.

News and Comment

ASSOCIATION OF APPLIED BIOLOGISTS JUBILEE CONFERENCE

The Association of Applied Biologists has recently been celebrating the successful conclusion of 50 years of vigorous and useful life. Under the genial Presidency of Emeritus Professor W. Brown, the Association held its Jubilee Conference at the Imperial College, South Kensington, from the 13th to the 15th of September. The Conference was attended by scientists working in many diverse fields of applied biology, and there were many visitors from overseas, particularly from the United States, and from Holland.

During the Conference meetings, a wide variety of subjects was considered, including the questions of "International Co-operation in the Field of Crop Protection," "Insect Pests of Stored Products," "Problems in Applied Zoology" and many other subjects of fundamental importance in the growth of plants, and in the control of their diseases. The meetings were well attended, and many lively discussions ensued.

In the section dealing with problems in applied zoology, one of the speakers was Dr. Carmichael. He reviewed the present day knowledge concerning insects of veterinary importance in the Colonial territories, and he paid particular attention to the menace of ticks and tsetse fly. In the same meeting, Professor J. B. Cragg of the University of Durham, delivered a most interesting paper on ecological and behaviour studies on sheep blow-flies.

At one of the general meetings, Professor V. B. Wigglesworth, C.B.E., F.R.S., of the University of Cambridge, gave a lively and much appreciated discourse on "The Contribution of Fundamental Research to Applied Biology." Professor Wigglesworth told his listeners that the greatest contribution that pure science could make to applied biology was to see that applied biologists received a thorough training in pure science before they embarked on the application of their craft. Perhaps there is some food for thought in this remark for our veterinary educationists.

During the course of the Conference, there was a very successful conversazione, which was attended not only by registered members of the Conference, but by many other visitors. The conversazione was held in the chemistry laboratories of the Imperial College, where a large number of interesting exhibits covering a very wide range of subjects was set out. The exhibits included a display supplied by the Ministry of Agriculture, illustrating the present position with myxomatosis of rabbits. This exhibit attracted a great deal of interest, and during the course of the evening members were invited to listen to a radio broadcast then in progress on the subject of myxomatosis.

There were other exhibits on the biology and control of Liver Fluke supplied from the Veterinary Laboratory, Weybridge, on Paramphistomes of cattle and sheep supplied from the Commonwealth Bureau of Animal Parasitology, St. Albans, while live locusts and tsetse flies figured in interesting exhibits supplied from overseas. Another exhibit which was of particular interest to the many veterinarians attending the conversazione was a series of photographs and specimens illustrating progress in the control of sheep and cattle parasites over the past 50 years. This was accompanied by an exhibit illustrating the history of the use of pyrethrum for insect control, both exhibits being supplied by the Cooper Technical Bureau.

The main part of the Conference concluded on Wednesday, the 15th of September, with a Dinner, at which the delegats showed that they could not only apply their minds to the problems of crops and animals, but could apply their mouths to the satisfaction of their own biological needs for nourishment. In an atmosphere of good food, good fellowship, and entertaining speeches, the Conference dissolved.

H. E. H.

WESTERN REGIONAL BROADCAST

We have now received the text of the broadcast talk given on September 20th by Dr. D. E. Tribe, of Bristol University. For the interest of our readers we quote it in full as follows:—

"Once a year veterinary surgeons from all parts of the British Isles get together to discuss current problems of animal health and to hear of the recent advances made in methods of diagnosis and treatment. On Wednesday, for example, the chief veterinary surgeon of the Ministry of Agriculture will be opening a discussion on myxomatosis. The disease is with us now in almost every county and what we need to know is, does vaccination give a serviceable immunity? Could it attack other animals besides rabbits? What will be the long term effects on our wild animal population of a substantial reduction in the rabbit population? Undoubtedly the veterinary surgeons will be trying to find the answers to these and other questions on Wednesday.

"The recent chaos in pig marketing has made every farmer realise that if pig production is to remain profitable then all inefficiency and wastage in feeding and management must be cut out. Here the veterinary surgeon has a big part to play, for one of the most serious sources of wastage is the heavy mortality rate of young pigs. On Friday, therefore, attention is to be given to the rearing and feeding of pigs and to the ways of preventing these deaths which farmers just can't afford.

"Since the war the poultry industry has expanded to such an extent that now only the dairy cow makes a larger contribution to farming prosperity than the hen. But in spite of so much attention being given to poultry, it was estimated that last year losses in birds and eggs through disease still cost the industry no less than £20 million. Thursday's main discussion, therefore, is centred on this problem. What are the most important poultry diseases and how may they best be controlled?

"The keynote of the Congress is food production, and besides the sessions on pigs and poultry, other

papers are to deal with the scientific trends in milk production, the prevention of various diseases in sheep, and the present position regarding mastitis. It would be wrong, however, to give the impression that only farming matters are to be discussed. Various factors affecting the health of dogs, *e.g.*, are to receive a good deal of attention and an important session on meat inspection will, I imagine, highlight the deficiencies of the existing system and indicate how the public's health may be still further safeguarded in the future.

" Numerically the British Veterinary Association is not a very large body (there are only about 4,000 veterinary surgeons in the whole country), but a glance at the programme of this week's Congress reminded me again of how wide their responsibility is and how much all of us owe to their high standards and hard work."

PROFESSOR AMOROSO IN AMERICA

An American correspondent writes: There is often reference in the columns of THE VETERINARY RECORD to visits by members of the profession to foreign countries. It might thus be meet for me to draw your attention to the visit of Professor E. C. Amoroso, to the U.S.A.

Professor Amoroso is not, of course, strictly a member of the veterinary profession, yet he is, in all but name and qualification. Having taught at the Royal Veterinary College for over 20 years, his name is known to generations of students, many of whom will recall him as one of the most brilliant and inspiring lecturers. For some years he taught histology and embryology, later he was appointed to the Chair of Physiology, and still has interests in histology and embryology under his command. However, when you try to nail down just exactly what his speciality has been, in the words of one who knows him well, it might be difficult to label him as a physiologist with a sound morphological background of anatomy, embryology and histology, or as a morphologist with a leaning towards physiology. In effect, all his working life he has been a biologist, with a medical qualification, who has striven in his studies to correlate structure with function, with some particular reference to reproduction.

Early in 1954, Dr. Amoroso was invited by the Macy Foundation to take part in an international symposium which is held yearly, and which in 1954 dealt with (1) Gestation and (2) the Mammalian Foetus. He was Chairman of one meeting on Placentation, upon which subject he is a leading world authority. During his stay in the U.S.A., Dr. Amoroso was a visiting lecturer at over 30 different medical, veterinary and biological research and teaching institutions from the east to the west coast. He gave lectures on many different topics including early foetal implantation and development, endometrial reactions in pregnancy, placentation, cortical ablation on goats, and one of his most popular talks with a ciné film was entitled " The Post-natal Life of Seals."

He was appointed visiting Professor in the Department of Anatomy, Washington University Medical School, St. Louis, and also at the Carnegie Institute for Embryology, Baltimore. I had the privilege of listening to Dr. Amoroso lecture on five separate occasions, once in company with an old Camden Town student, Dr. Habib Khan, now Principal of the Veterinary College, Hyderabad. Dr. Amoroso in his talks, entirely without notes, gave a superb display of the art of scientific lecturing, traditional in many academic institutions of England. Many listeners to his lectures informed me that they had rarely been privileged to hear such a speaker, and visitor, from England, not only for his erudition but for his concise delivery and clarity of the English language. After an eloquent lecture on endometrial reactions in pregnancy, to a distinguished band of pathologists in Washington, D.C., I was asked whether Dr. Amoroso was a typical example of teaching as practised in veterinary colleges in Britain, for if so, then the standard must be of an extremely high order indeed. As a Professor in the London College, Dr. Amoroso by his lectures, and discussions with hundreds of workers in the U.S.A., contributed in distinguished measure to the repute of the British veterinary profession and of the famous College in Camden Town. The profession ought to be proud in having him as one of their most noted teachers, and one who has contributed greatly in a scientific sense to many aspects of general morphology and physiology of reproduction (maybe all too little known within the profession). The ancient art of lecturing as an expression of learning, combined with oratory, in British universities and colleges clearly has not been lost while there remain brilliant exponents such as Dr. Amoroso.

COMING EVENTS

Oct. 13th.—Meeting of the R.A.V.C. Division, B.V.A., at Guildford Public Abattoir, Woodlands Road, Guildford, 2.15 p.m.

Oct. 13th.—Ordinary General Meeting of the Sussex Division, B.V.A., at the Old Ship Hotel, Brighton, 2.30 p.m.

Oct. 13th.—General Meeting of the Midland Counties Division, B.V.A., at the Birmingham Medical Institute, 154, Great Charles Street, Birmingham, 2.30 p.m.

Oct. 14th.—Meeting of the Supplementary Veterinary Register Division, B.V.A., at 7, Mansfield Street, Portland Place, London, W.1, 2 p.m.

Oct. 14th.—Autumn Meeting of the North of Scotland Division, B.V.A., in the Station Hotel, Inverness, 2.30 p.m.

Oct. 14th.—Meeting of the Western Counties Division, B.V.A., at Agricultural House, Queen Street, Exeter, 2.30 p.m.

Oct. 15th.—General Meeting of the Mid-West Division, B.V.A., at the Berkeley Café, Clifton, Bristol, 2.30 p.m.

Oct. 15th.—Meeting of the Welsh Division, B.V.A., in the Dairy Buildings, Llanbadarn Road, Aberystwyth, 2 p.m.

Oct. 15th.—Dinner-Dance of the Royal Counties Division, B.V.A., at the Skindles Hotel, Maidenhead.

Oct. 20th.—Meeting of the Royal Society of Medicine, Section of Comparative Medicine, at the Society's house, 5 p.m.

Oct. 21st.—Ordinary General Meeting of the South-Eastern Division, B.V.A., at the Royal Star Hotel, Maidstone, 2.30 p.m.

Oct. 22nd.—Annual Dinner Dance of the South Wales Division, B.V.A., at the Seabank Hotel, Porthcawl, 7.30 p.m.

Oct. 28th.—General Meeting of the Herts and Beds Division, B.V.A., at 70, Holywell Hill, St. Albans, 7.30 p.m.

Oct. 28th.—General Meeting of the Society of Practising Veterinary Surgeons, B.V.A., at the Grand Hotel, Peterborough, 2.30 p.m.

Oct. 29th.—Informal Dinner for the Lancashire Division, B.V.A., at the Blue Cap Restaurant, Sandiway, Cheshire, 7.15 p.m.

Nov. 3rd.—General Meeting of the Scottish Metropolitan Division, British Veterinary Association at the Royal (Dick) School of Veterinary Studies, 2.30 p.m.

Nov. 16th & 17th.—B.V.A. Conference on the Feeding of Farm Livestock for Health and Production in the South Hall, Victoria Halls, Bloomsbury Square, London, W.C.1.

NOVEMBER MEETINGS OF COMMITTEES AND COUNCIL OF THE B.V.A.

AT NO. 7, MANSFIELD STREET, W.1.

Wednesday, November 3rd.—

11 a.m. Veterinary State Medicine Committee.
2.30 p.m. Parliamentary & Public Relations Committee.
4 p.m. Home Appointments Committee.

Thursday, November 4th.—

10.30 a.m. Organising Committee.
12 noon Finance Sub-committee.
2 p.m. General Purposes & Finance Committee.

AT CONNAUGHT ROOMS, GREAT QUEEN STREET, W.C.1.

Friday, November 5th.—

10.30 a.m. Council Meeting.

PERSONAL

Births

GOSS.—On September 23rd, 1954, at Victoria Maternity Hospital, Ripon, to Mary (*née* Carlton), wife of Clifford Goss, M.R.C.V.S., a son.

HEDGER.—On August 28th, 1954, at the Princess Elizabeth Hospital, Nairobi, Kenya, to Sylvia, wife of R. S. Hedger, M.R.C.V.S., a son—André John.

SELF.—On September 27th, 1954, at the W. J. Courtauld Hospital, Braintree, to Audrey (*née* Williams), wife of Anthony Self, M.R.C.V.S., a son —Richard William.

Marriage

JESSOP—COLEMAN.—The marriage took place on September 10th, 1954, at Rodden Church, Somerset, between Lewis Jessop, only son of Mrs. and the late Mr. S. Jessop, of Llandaff, Cardiff, and Iris Margaret Coleman, younger daughter of Mr. G. W. Coleman, J.P., and Mrs. Coleman, of Adderwell, Frome.

R.C.V.S. Obituary

CONACHER, Peter, of Sunnyside, Parktown, Johannesburg, South Africa. Graduated Edinburgh, May 28th, 1889. Died September 16th, 1954.

GIBSON, John, of 125, Nethergate, Dundee. Graduated Glasgow, December 15th, 1911. Died September 20th, 1954; aged 67 years. No letters

JOHN GIBSON, M.R.C.V.S.

Mr. A. Spreull writes:—With deep regret I heard of the passing of Mr. John Gibson, a highly respected member of our profession, who will be sadly missed by his many friends and associates.

His modest unassuming nature impressed everyone and many young veterinary surgeons are indeed grateful for the sound knowledge obtained from a tactful and courteous gentleman.

He was a conscientious practitioner who held the respect and esteem of all.

Accessions to the R.C.V.S. Library

It is hoped in future that we shall publish a weekly selection of books, journals, reports etc., received in the R.C.V.S. Library. Any items may be borrowed on application to the Librarian.

AINSWORTH, G. C. *and* BISBY, G. R. A dictionary of the fungi. *Fourth edition.* Kew, Commonwealth Mycological Institute, 1954.

BRITISH VETERINARY ASSOCIATION. Report on meat inspection control in Western Europe. London, British Veterinary Association, 1954.

COFFIN, D. L. Angell memorial parakeet and parrot book. Boston, Angell Memorial Animal Hospital, 1953.

GAINES DOG RESEARCH CENTER. The newer knowledge about dogs. New York, Gaines Dog Research Center (1951)

GOTZE, R. Dammritznaht Plastik der Vulva und des Scheidenvorhofes bei Stuten und Kuhen. Hanover, M. & H. Schaper, 1952.

GREAT BRITAIN. Advisory Committee on myxomatosis. Report of the advisory committee. London, H.M.S.O., 1954.

GREAT BRITAIN. Departmental Committee on foot-and-mouth disease. Report of the departmental committee on foot-and-mouth disease, 1952-1954. London, H.M.S.O., 1954.

GUARD, W. F. Surgical principles and technics. Columbus, W. F. Guard, 1951.

HERTER, K. Vergleichende physiologie der Tiere. Berlin, Walter de Gruyter and Co., 1950. 2 vols.

JONES, L. M. Veterinary pharmacology and therapeutics. Ames, Iowa State College Press, 1954.

LAWPENCE, J. S. *and* FRANCIS, J. The sulphonamides and antibiotics in man and animals. London, H. K. Lewis, 1953.

MCKAY, W. M. Application of cobalt in agriculture. London, Mond Nickel Co. Ltd., n.d.

ADDRESSES OF DISEASE-INFECTED PREMISES

This list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax :

Angus. Kirkton Farm, Monikil (Oct. 2).
Clackmannan. Hilton Farm, Alloa (Sept. 27).
Durham. Warden Law Farm, Houghton-le-Spring (Sept. 27).
Leics. Cotterill Farm, Houghton-on-the-Hill (Sept. 24); Broxtowe Farm, Ashby Magna, Rugby (Sept. 30).
Lincs. Yewdale Farm, Hurdle Tree Bank, Holbeach Fen, Spalding (Sept. 29).
Worcs. Manor Farm, Aston Somerville, Broadway (Sept. 28).
Yorks. Manor Farm, Sigglesthorne, Hull (Sept. 25); Rectory Farm, Nafferton, Driffield; Fair View Farm, Booze, Arkergarthdale, Richmond (Sept. 27); Long Grain Farm, Wass (Sept. 29).
Sussex. Carters Corner Place Farm, Hailsham (Sept. 29).

Fowl Pest :

Lincs. Clovelly, Portland Road, Crowland, Peterborough (Oct. 3).
Norfolk. Ash View, Collin Green, Lyng, Norwich (Sept. 29).
Sussex. School Lane Poultry Farm, Eastergate, Chichester (Sept. 28); Milleards Farm, Eastergate (Oct. 2).

Swine Fever :

Ches. Willow Farm, Thornton Common Road, Thornton Hough, Wirral (Sept. 27).
Derbys. The Piggeries, Spordon (Sept. 29).
Kent. St. Christopher's Piggeries, Erriot Wood, Lynsted, Sittingbourne (Sept. 29).
Lancs. Chorlton Fold Farm, Eccles, Manchester (Sept. 27).
Lincs. Wallhead's Gravel Pit, Lincoln Road, Ruskington, Sleaford (Sept. 28).
Monmouth. Cefn Mawr Farm, Mankswood, Usk (Oct. 1).
Norfolk. The Beeches, Mile Cross Lane, Norwich (Sept. 30).
Notts. Quakers Lane, Farmsfield, Newark (Sept. 27); Providence Farm, Blidworth, Mansfield (Oct. 3).
Salop. Lythwood Hall Farm, Upper Pulley, Bayston Hill, Shrewsbury (Oct. 2).
Somerset. The Piggeries, Church Lane, Bishop Sutton, Bristol (Sept. 28); Ivy Farm, East Dundry, Bristol (Oct. 1).
Staffs 51, Newcastle Street, Burslem, Stoke-on-Trent (Sept. 27).
Suffolk. Red House Farm, Elmsett, Ipswich (Sept. 29).
Surrey. Grove Farm, Great Bookham, Leatherhead (Sept. 29).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

FOOT-AND-MOUTH DISEASE

Sir,—I have read with considerable interest your review of the Departmental Committee's Report on Foot-and-mouth Disease and the eulogies of my confreres at Portland Place. It appears to me to be an apologia of the slaughter policy and those who have imposed it, and of the experts of Pirbright, who, after 30 years' strenuous effort have devised no alternative to it.

I fail to understand how the slaughter policy can ever eliminate foot-and-mouth disease from Great Britain, which at any time and in any place may be invaded from a hundred and one sources by any of a hundred and one " strains " of virus which may be disseminated from one end of the country to the other—say from Crewe to Aberdeen—before its presence is even suspected. The Report laments the ignorance of the practising veterinary surgeon and the public. How, then, are they to recognise the disease ? Moreover, although our gallant confreres may slaughter all the domestic stock in Great Britain, the disease may lie latent in the small animals of the field and become enzootic in them. And there is a form of the disease which is characterised by a thermal reaction only, without visible lesions. How is that to be recognised ? Would it not be better if our domestic animals were to be immunised against the disease as they are against, let us say, quarter evil in enzootic areas ?

Personally, from practical experience, I am in favour of a standardised polyvalent virus-vaccine, such as was used in Southern Rhodesia in 1931-2

with great success on millions of animals. A monovalent or bivalent vaccine, which the Pirbright workers appear to have devised, would be useless against the innumerable types, strains, mutations and variations of virus which they themselves, with so much ingenuity, have identified. It should not be difficult with all the facilities and brains available at Pirbright to elaborate a polyvalent vaccine against all of them, as was done in Rhodesia in 1931 by " one man and a boy " in five months. In 1932 I myself worked (*sic*) at Pirbright under the late Dr. Horner Andrews and Mr. Eccles. I asked them to test out this Rhodesian method, but they regretfully told me they were not permitted to do so. The Government could think only in terms of slaughter, and they had to concentrate on " typing." The Committee should not dismiss vaccination as a fantasy. Surely Sir Thomas Dalling has been relieved of his duties as Director of Veterinary Services and despatched to the Continent of Europe to search for a suitable vaccine ?

In my opinion the failure of the veterinary profession to eliminate foot-and-mouth disease in the past is due to the fact that it has had to receive its instructions from a Committee composed almost entirely of medical men, many of whom have known as little about foot-and-mouth disease as a veterinary surgeon knows about mumps and measles. I have a sheaf of letters from the late Dr. J. T. Edwards who, although the finest of our research workers, was subordinated to this Committee, which confirms my contention. And, may I add with great respect, that I consider it an indignity to our learned profession that a body of laymen should sit in judgment upon it ?

Yours faithfully,

L. E. W. BEVAN,

22, Camp Road,
Pinelands,
Capetown.

September 29th, 1954.

WILLIAM HUNTING

Sir,—Half a century ago I had a memorable experience. I was taken by my father to witness a *post-mortem* on a glandered horse, performed by a great master of the veterinary art. This grave, bearded, frock-coated sage was kindness itself to me, a schoolboy not yet in his teens, and went to great pains to show me the lesions of the disease, for, as he remarked, in a few years there would be no more horses with glanders for me to see. At our leave-taking he rewarded my endurance of gore and knacker's smells with half a crown—a large tip for a small boy in those days. My mentor was William Hunting.

The veneration of that time, which was common to all veterinarians who had dealings with Hunting, has, so far as I am concerned, remained. It fell to my lot during the last war, to share with William Brown, for weeks on end, during the bombing of London, when the meetings of the Editorial Committee were almost abandoned, the production of THE RECORD at Gordon Square. We would have felt ourselves false to his memory had we deleted the portrait of our founder from its pages.

And now, without warning it is raped from its proud position, and, *horribile dictu*, replaced by a cretinous cob of a centaur, with chronic collar galls and a fractured ischium! And if the background is to be red, why this depleted venous hue? What is wrong with a rich arterial life-bringing crimson ? Better still, let it be the delicate green of eternal spring.

But, in any case, somewhere, give us back our Hunting.

Your faithfully,

R. C. G. HANCOCK,

Springhurst,
Ecchinswell,
Newbury, Berks.

September 18th, 1954.

PIGLET MORTALITY

Sir,—In THE VETERINARY RECORD of August 7th, there was an article on piglet mortality, by H. I. Field, D. Buntain and J. T. Done, with reference to streptococcal meningitis and arthritis. I believe I have seen this syndrome in my practice in Co. Cork.

In April 1953 I was called to see two recumbent pigs, 10 weeks old, out of a litter of 12. One had been sick two days and seemed *in extremis*. Both had a temperature of 105°F., a dazed appearance, hot swollen hocks, stifles and knees. They protested strongly when their limbs were moved, and also if their spines were curved, or if they were tapped on the skull. Their conjunctiva were infected. A tentative diagnosis of septic arthritis with, perhaps, meningitis was made.

Oremega crystalline penicillin was injected intramuscularly. By the second day the pigs were standing, but still slightly stiff; they were eating a small amount of food, their temperatures were normal and an injection of 4 c.c. duracillin was given to each.

The third day two more pigs were affected, the first two being, by then, indistinguishable from the rest. The same routine was followed. The food was medicated with aurofac A at the rate of three teaspoonfuls/head/feed, and no more cases resulted.

Since then I have had occasion to treat many similar cases, but their ages ranged between one and four weeks, and temperatures of 106 to 107° F.

The total number of litters treated to date is 19, about 90 per cent. of each litter being affected. The length of time between the first piglet getting the disease and the last was sometimes 12 days.

Two injections of 2 c.c. duracillin on following days, always seemed to give a lasting cure, one injection giving an apparent recovery, with a subsequent relapse. One prophylactic injection of 2

c.c. duracillin was ineffective in preventing the spread.

In July 1954, in two litters at the same farm, a prophylactic injection of 2 c.c. penideeral (Wipth) to the unaffected piglets was quite effective.

Yours faithfully,

E. F. MAYDEW,

Bridge House,
Clonakilty,
Co. Cork. *September 14th*, 1954.

A LEGITIMATE GRIEVANCE

Sir,—Your article under the heading "A Legitimate Grievance," in THE RECORD of August 21st is most timely.

As a disinterested member living abroad, it has been my privilege and pleasure to visit a great many veterinary establishments in the North American continent and meet their directors.

It is very apparent to me that no loss of professional prestige has resulted from the exhibition of a sign in large lettering notifying the public that the said premises is a veterinary or dog and cat hospital.

I have found the profession to be held in high esteem everywhere, and able to enjoy the extra attention one receives by virtue of the title "doctor."

It has been discouraging to learn from THE RECORD & SUPPLEMENT that the various animal welfare societies have been permitted to increase their activities into the realms of pure surgery (spays, etc.) and vaccination, constantly advertising, exhibiting large signs at their clinics and benefiting from the public purse to further these ends.

And yet the man who is best qualified, by five years of hard work, to provide this service and expecting to make an income commensurate with his ability, is restricted by his elected representatives to exhibiting his name on a piece of brass which must not exceed the dimensions of 13 by 8 inches.

It is laughable if it were not so tragic. This is no thin end of the wedge, but a movement firmly established and well enough supported to take over completely the treatment of small animals in Great Britain.

In a few more years there may again be a surplus of veterinarians by virtue of the number qualifying annually. Perhaps then the powers that control these things will realise how well and truly they have lost the reins.

Yours faithfully,

R. E. EARNSHAW,

Penticton Veterinary Hospital,
Penticton, B.C.

September 13th, 1954.

BASIC FEES

Sir,—Undoubtedly one of the major worries which confronts a graduate commencing practice on his (or her) own account is the question of fees. In most other professions scales of minimum fees to be charged are laid down by their governing bodies.

The newcomer to a district has only two methods by which he can fix fees. One is by consulting his predecessor and the other by contacting neighbouring practitioners. Regarding the latter method, these charges will certainly vary considerably. The newcomer may then choose the middle path, or be branded as cut-throat or as exorbitant.

The laying down of minimum fees by the R.C.V.S. and/or the B.V.A. is long overdue. Initially a census of charges would have to be made by a national circularisation of practitioners. Further nationalisation will certainly occur should the Labour Party return to power. The enhanced cohesion of the profession having basic standard charges would be of the utmost importance in either resisting nationalisation, or in fixing charges should this take place.

Yours faithfully,

J. A. TOOVEY,

Church House,
St. Neots,
Hunts.

September 19th, 1954.

A WARNING TO FARMERS

Sir,—Under the Veterinary Surgeons Act, 1948, certain persons are exempted from restrictions regarding the castration of the horse, pony, ass or mule, up to the age of two years; bull, goat and ram up to 15 months; boar up to nine months; and dog and cat up to six months.

How many of these exempted people are aware that if they carry out these operations on the horse, bull, ass, mule or sheep over the age of 12 months, on a goat over the age of three months, or on the pig over seven months, *without an anaesthetic*, they will be liable to be brought before the court under the Protection of Animals (Anaesthetics) Act, 1954?

If found guilty, they may be heavily fined, or committed to prison, for *performing an operation without due care and humanity!*

Now, the question arises, are these persons to be permitted to give anaesthetics? How will they obtain them, and be instructed how to administer them? Will they have to call in a veterinary surgeon, and if a veterinary surgeon is called in will he not be running the risk of finding himself required to appear before the Disciplinary Committee, to show cause why his name should not be removed from the Register for conduct disgraceful in a professional sense, by giving his presence, countenance, advice, or co-operation to an unregistered person in the attending, treating, or operating on an animal in respect of matters requiring professional discretion or skill?

Yours faithfully,

THOMAS LISHMAN,
Barrister-at-Law,

23, Queen's Gate Gardens,
S.W.7.

September 20th, 1954.